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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/714,871	11/18/2003	Michael Philip Fitton	245457US2CRL	3133
22850 7590 01/08/2007 OBLON, SPIVAK, MCCLELLAND, MAIER & NEUSTADT, P.C. 1940 DUKE STREET ALEXANDRIA, VA 22314			EXAMINER ODOM, CURTIS B	
			ART UNIT	PAPER NUMBER
			2611	
SHORTENED STATUTORY PERIOD OF RESPONSE		MAIL DATE	DELIVERY MODE	
3 MONTHS		01/08/2007	PAPER	

**Please find below and/or attached an Office communication concerning this application or proceeding.**

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/714,871	<b>Applicant(s)</b> FITTON ET AL.	
	<b>Examiner</b> Curtis B. Odom	<b>Art Unit</b> 2611	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 18 November 2003.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-22 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-22 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 19 September 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |                                                                                                                       |                                                                                         |
|-----------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                                           | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                  | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____                                                |

## DETAILED ACTION

### *Specification*

1. Applicant is reminded of the proper language and format for an abstract of the disclosure.

The abstract should be in narrative form and generally limited to a single paragraph on a separate sheet within the range of 50 to 150 words. It is important that the abstract not exceed 150 words in length since the space provided for the abstract on the computer tape used by the printer is limited. The form and legal phraseology often used in patent claims, such as "means" and "said," should be avoided. The abstract should describe the disclosure sufficiently to assist readers in deciding whether there is a need for consulting the full patent text for details.

The language should be clear and concise and should not repeat information given in the title. It should avoid using phrases which can be implied, such as, "The disclosure concerns," "The disclosure defined by this invention," "The disclosure describes," etc.

2. The abstract of the disclosure is objected to because it contains more than one paragraph (see above). Correction is required. See MPEP § 608.01(b).

### *Claim Rejections - 35 USC § 101*

3. 35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

4. Claims 13, 14, and 22 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter. Claims 13, 14, and 22 recite code/instructions without a readable medium for the code/instructions. MPEP 2106.01 [R-5], Section I states the following:

**Similarly, computer programs claimed as computer listings per se, i.e., the descriptions or expressions of the programs, are not physical "things." They are neither**

**computer components nor statutory processes, as they are not “acts” being performed.**

**Such claimed computer programs do not define any structural and functional interrelationships between the computer program and other claimed elements of a computer which permit the computer program’s functionality to be realized. In contrast, a claimed computer-readable medium encoded with a computer program is a computer element which defines structural and functional interrelationships between the computer program and the rest of the computer which permit the computer program’s functionality to be realized, and is thus statutory. See Lowry, 32 F.3d at 1583-84, 32 USPQ2d at 1035. Accordingly, it is important to distinguish claims that define descriptive material per se from claims that define statutory inventions.**

***Claim Rejections - 35 USC § 112***

5. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

6. Claims 19-21 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Claim 19 recites an apparatus (receiver) and the method steps of using the apparatus. MPEP 2173.05(p) states:

**A single claim which claims both an apparatus and the method steps of using the apparatus is indefinite under 35 U.S.C. 112, second paragraph. \*> IPXL Holdings v.**

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**Amazon.com, Inc., 430 F.2d 1377, 1384, 77 USPQ2d 1140, 1145 (Fed. Cir. 2005);  
Ex parte Lyell, 17 USPQ2d 1548 (Bd. Pat. App. & Inter. 1990) \*(< claim directed to  
an automatic transmission workstand and the method \* of using it \* held \*\* ambiguous  
and properly rejected under 35 U.S.C. 112, second paragraph>)<.**

***Claim Rejections - 35 USC § 102***

7. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

8. Claims 1, 2, 4, 6, 9-15, 18, 19, and 22 are rejected under 35 U.S.C. 102(b) as being anticipated by Nicol (U. S. Patent No. 6, 282, 661).

Regarding claim 1, Nicol discloses a method of reducing power consumption in a data receiver (see Fig. 1, column 3, lines 21-26), the receiver being configured to process a received signal using repeated DSP cycles (see column 1, lines 29-31 and column 3, lines 44-46) of substantially the same DSP, a rate of the repetitions being determined by a clock frequency of the DSP (see column 4, lines 52-61, wherein reducing the clock frequency reduces the rate at which the cycles are performed as described in column 4, lines 52-61) the method comprising:

determining a number (1000) of cycles (see column 4, lines 44-56) of the repeated implementations of the DSP;

processing (filtering) the receiving signal (see column 4, lines 44-56) according to the 1000 cycles;

adjusting the number of repetitions to 50 cycles (see column 4, lines 52-61) in response to a power saving control code (see column 5, line 59-column 6, line 15); and

jointly reducing the clock frequency and a power supply voltage (see column 3, lines 21-26 and column 4, lines 3-16) to the DSP in response to the power saving control code (see column 5, line 59-column 6, line 15) and control signals (see column 4, lines 3-16) to reduce the receiver power consumption as described in column 3, lines 21-26.

Regarding claim 2, Nicol discloses the receiver is configured to process the signal in substantially real time (see column 5, lines 11-58), and wherein the receiver power consumption (adjustment of clock frequency and taps) is reduced whilst maintaining the substantially real time processing capability as disclosed in column 5, lines 11-58.

Regarding claim 4, Nicol discloses control code/signals are responsive to a determined received signal quality (see column 6, line 5, Eavg), wherein Evg can represent bit error rate (see column 4, lines 37-57).

Regarding claim 6, Nicol discloses increasing the number of cycles (see column 4, line 66-column 5, line 4, wherein increasing the taps increases the cycles as described in column 4, lines 44-57) in response to a second instruction of the control code (see column 6, lines 10-15); and jointly increasing the clock frequency (see column 6, lines 1-15) and the power supply voltage (see column 6, lines 34-40, wherein the power supply voltage and clock frequency are jointly increased, see column 6, lines 34-40) in response to the second instruction of the control code (see column 6, lines 10-15).

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Regarding claims 9-12, Nicol discloses the DSP can be implemented as a receive filter, adaptive equalizer, echo (interference) canceller, or finite impulse response filter (see column 2, line 63-column 3, line 8), wherein turbo equalizers, and MLSE equalizers are adaptive equalizers.

Regarding claims 13 and 14, Nicol discloses the limitations of claims 13 and 14 (see rejection of claim 1) including the method of claim 1 implemented in a receiver (see Fig. 1) as DSP control code (see column 5, line 59-column 6, line 15), including the code implemented as software (data carrier), see column 1, lines 15-19 and column 4, lines 37-43).

Regarding claim 15, Nicol discloses a power controller (see Fig. 1, blocks 102, and 110-114) for a data receiver, the receiver being configured to process a received signal using repeated DSP cycles (see column 1, lines 29-31 and column 3, lines 44-46) of substantially the same DSP, a rate of the repetitions being determined by a clock frequency of the DSP (see column 4, lines 52-61, wherein reducing the clock frequency reduces the rate at which the cycles are performed as described in column 4, lines 52-61) the power controller comprising:

means (Fig. 1, block 102) for determining a number (1000) of cycles (see column 4, lines 44-56) of the repeated implementations of the DSP;

means (Fig. 1, block 102) for adjusting the number of repetitions to 50 cycles (see column 4, lines 52-61) in response to a power saving control code (see column 5, line 59-column 6, line 15); and

means (Fig. 1, blocks 110-114) for jointly reducing the clock frequency and a power supply voltage (see column 3, lines 21-26 and column 4, lines 3-16) to the DSP in response to the power saving control code (see column 5, line 59-column 6, line 15) and control signals (see

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column 4, lines 3-16) to reduce the receiver power consumption as described in column 3, lines 21-26.

Regarding claim 18, Nicol discloses the power controller is in a receiver (see Fig. 1).

Regarding claim 19, Nicol discloses a receiver (Fig. 1) for a data communication link, the receiver being configured to process a received signal in substantially real time (see column 5, lines 11-58) using repeated DSP cycles (see column 1, lines 29-31 and column 3, lines 44-46) of substantially the same DSP, a rate of the repetitions being determined by a clock frequency of the DSP (see column 4, lines 52-61, wherein reducing the clock frequency reduces the rate at which the cycles are performed as described in column 4, lines 52-61), the receiver including a DSP control processor (see Fig. 1, block 102), including an instruction memory (core), see column 1, lines 16-21, the instructions (see column 5, line 59-column 6, line 15) controlling the receiver to:

repeatedly implement the DSP byprocessing (filtering) the receiving signal (see column 4, lines 44-56) according to the 1000 DSP cycles;

adjusting the number of repetitions to 50 cycles (see column 4, lines 52-61) in response to a power saving control code (see column 5, line 59-column 6, line 15); and

jointly reducing the clock frequency and a power supply voltage (see column 3, lines 21-26 and column 4, lines 3-16) to the DSP in response to the power saving control code (see column 5, line 59-column 6, line 15) and control signals (see column 4, lines 3-16) to control the receiver power consumption as described in column 3, lines 21-26.

Regarding claim 22, the claim includes features corresponding to the above rejection of claim 19, which is applicable hereto.



*Claim Rejections - 35 USC § 103*

9. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

10. Claims 3, 16, and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nicol (U. S. Patent No. 6, 282, 661) as applied to claims 1, 15, and 19, and in further view of Bingham et al. (U. S. Patent No. 4, 263, 673).

Regarding claims 3, 16, and 20, Nicol discloses the receiver has a subsequent data processing element (Fig. 1, block 104) configured to input data from the DSP cycles, and wherein the receiver further comprises a buffer/elastic store (Fig. 1, block 103) configured for storing the data asynchronously from the DSP (see column 3, lines 31-35) and configured to permit reading of the data from the DSP element, for provision to the subsequent data processing element (Fig. 1, block 104). Nicol does not disclose the data is read to the second processing element asynchronously.

However, Bingham et al discloses processing a received signal with a first modem processor (see Fig. 1, block 35), writing data synchronously from the modem to a receive buffer (see Fig. 1, block 36, column 4, lines 62-67), and reading data from the buffer in asynchronous manner (see column 2, lines 42-49, column 4, lines 31-36, and column 9, lines 1-10). Therefore, it would have been obvious to one skilled in the art at the time the invention was made to modify

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the buffer of Nicol with the buffer of Bingham et al. in order to output asynchronous data since Bingham et al. states the buffer is simple, reliable and economical (see column 2, lines 28-31).

11. Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Nicol (U. S. Patent No. 6, 282, 661) as applied to claim 1, in view of Maejima (U. S. Patent No. 6, 789, 207).

Regarding claim 5, Nicol discloses joint reducing of the clock frequency and power supply voltage comprises selecting a clock frequency and power supply voltage combination (see column 6, lines 33-43). Nicol does not disclose the selection is from a set of clock frequency-supply voltage combinations stored in the receiver.

However, Maejima discloses a power consumption control circuit (see Fig. 4) for a processor which includes a memory which stores power/clock switching signals (see column 7, lines 59-66) corresponding to a set of clock frequency-supply voltage combinations (see column 8, lines 5-19). These switching signals are applied to adjust (lower or raise) the power supply and clock frequency of the processor as disclosed in column 8, lines 5-19. Therefore, it would have been obvious to one skilled in the art at the time the invention was made to implement the stored power/clock switching signals in Nicol as disclosed by Maejima since Maejima states lowering the clock frequency lowers the power consumption of the processor (see column 1, lines 18-22).

12. Claims 7, 8, 17, and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nicol (U. S. Patent No. 6, 282, 661) as applied to claims 1, 17, and 19, in further view of Sriram (U. S. Patent No. 6, 366, 606).

Regarding claims 7, 8, 17, and 21, Nicol does not disclose the receiver is a rake receiver, wherein the DSP comprises a time multiplexed correlator or time multiplexed rake finger.

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However, Sriram discloses a correlator in a rake receiver (see column 1, lines 15-23), wherein the rake receiver includes several correlators known as fingers (see column 3, lines 21-27), the correlators being multiplexed (see column 5, lines 41-45). Nicol further discloses the receiver may be implemented on a DSP (column 2, lines 30-33). Therefore, it would have been obvious to one skilled in the art at the time the invention was made to implement the DSP of Nicol as a rake receiver disclosed by Sriram since Nicol states the DSP can reduce power consumption in the (rake) receiver, see column 3, lines 21-26.

### ***Conclusion***

13. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Nunomura (U. S. Patent No. 6, 928, 566) and Ohmori (U. S. Patent No. 6, 647, 502) disclose jointly adjusting power supply and clock frequency of processors.

14. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Curtis B. Odom whose telephone number is 571-272-3046. The examiner can normally be reached on Monday- Friday, 8-5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jay Patel can be reached on 571-272-2988. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

A handwritten signature in black ink, appearing to read 'Curtis Odom', with a long horizontal line extending to the right.

Curtis Odom  
January 4, 2007